



Deloitte helps organizations understand the opportunities and risks presented by the Fourth Industrial Revolution and apply that insight in pursuit of key objectives. We draw on deep industry experience and extensive knowledge in artificial intelligence, the Internet of Things, analytics, and other technologies underpinning Industry 4.0 to help organizations develop and execute innovative approaches to better serve their customers, people, communities, and other critical stakeholders.

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# Introduction: Leaders emerge

**“It’s just mind-boggling what has been achieved in the past 10 years. The speed by which things are changing is increasing at astonishing rates, product cycles are much shorter, innovation is happening faster, and it is very challenging for the C-suite, as well as the employees, to keep up with the pace. We have pivoted from a product-oriented organization to a services-oriented organization, which requires different people, different skill sets, and, at times, painful transitions.”**

— Harold Goddijn, CEO of TomTom NV

**A**S INDUSTRY 4.0 CONTINUES to reshape the world in which we live and work, business leaders are adapting to the changes it is causing. In Deloitte Global’s second annual survey assessing business and government readiness for the Fourth Industrial Revolution, leaders appear more knowledgeable about Industry 4.0 and its implications for their organizations. But with that knowledge comes a greater awareness of how quickly things are changing and how companies must act today to remain successful into the future.

The 2018 inaugural report, which aimed to assess executives and their organizations’ readiness for Industry 4.0, observed a “tension between hope and ambiguity.”<sup>1</sup> While executives understood the changes being brought about by Industry 4.0 and were confident they were ready, their actions (or lack thereof) demonstrated they were less prepared and less able than they thought to fully harness and benefit from those changes.

In this year’s survey, we aimed to uncover how leaders are moving forward, where they are making the most progress, and what sets apart the most effective leaders.

Of the many insights uncovered in this year’s report—which covers more than 2,000 C-suite executives across 19 countries—one seems to stand out: The number of respondents who insisted they are doing “all they could” to prepare their workforces for Industry 4.0 fell by nearly half. Knowing that business leaders are loath to take their collective foot off the pedal, this likely means that many executives are gaining a much deeper understanding of Industry 4.0, are increasingly aware of the challenges before them, and are viewing the actions needed to succeed in Industry 4.0 more realistically.

Though many in this year’s survey acknowledge they are still in the early stages of navigating Industry 4.0, we found that some leaders are making better progress than others in dealing with today’s challenges within the four major areas of impact—society, strategy, technology, and talent. We have grouped the leaders who seem to be getting it right into personas: Social Supers, Data-Driven Decisives, Disruption Drivers, and Talent Champions.

# Industry 4.0: Preparedness through societal, strategic, technological, and workforce dimensions

**A** GAIN THIS YEAR, we asked executives how they are enabling their organizations to succeed in the age of Industry 4.0 in four areas: positively affecting society, shaping business strategy, utilizing 4.0 technology, and managing talent and workforce needs. Among the findings:

## 1. Societal impact:

**Executives expressed a genuine commitment to improving the world.**

*Executives in last year's survey were uncertain about how they could influence the direction of Industry 4.0 and its impact on society. This year's research finds executives and their companies strongly committed to improving the world through Industry 4.0. Many insisted that it simply makes good business sense.*

Leaders rated societal impact as the most important factor when evaluating their organizations' annual performance, ahead of financial performance and customer or employee satisfaction. In the past year, nearly three-quarters of respondents said their organizations took steps to make or change products or services with societal impact in mind. While many are motivated by the promise of new revenue and growth, leaders are split on whether such initiatives can and will generate profit.

## 2. Strategy:

**Executives are struggling to develop effective strategies in today's rapidly changing markets.**

*Last year, many leaders saw their organizations focused more on developing new products and services and improving productivity than on adopting new business models or technologies. This year, they told us about some of the organizational roadblocks that appear to be limiting effective Industry 4.0 strategies.*

Faced with an ever-increasing array of new technologies, leaders said they feel as though they have too many options from which to choose and, in some cases, they lack the strategic vision to help guide their efforts. Organizational influences also challenge leaders as they seek to navigate Industry 4.0. Many leaders reported that their companies don't follow clearly defined decision-making processes—and that organizational silos limit their ability to develop and share knowledge to implement effective strategies.

## 3. Technology:

**Leaders continue to focus more on using advanced technologies to protect their positions than on making bold investments to drive disruption.**

*Last year, executives exhibited a cautious mindset when it came to investing in technology. Again this year, few expressed a commitment to disrupt their competitors or markets.*

Many of the businesses that have made investments in technology are seeing payoffs; others are finding it difficult to move forward. Challenges

include being too focused on short-term results, not fully understanding Industry 4.0 technologies, and a lack of leadership vision. Leaders acknowledged the ethical implications inherent in new technology, but few companies are even discussing how to manage those challenges, let alone actively putting policies in place to do so. Further, business leaders continue to wrestle with how Industry 4.0 technologies should be regulated.

#### 4. Talent:

**The skills challenge becomes clearer, but so do differences between executives and their millennial workforces.**

*The breadth of the skills gap is more evident to leaders compared with last year, as is a sobering*

*awareness that the current education system will be inadequate to meet the challenge.*

Last year, most leaders (86 percent) thought their organizations were doing everything they could to create a workforce for Industry 4.0. This year, as more recognize the growing skills gap, only 47 percent are as confident in their efforts. On the bright side, nearly twice as many leaders indicated that their organizations will strive to train existing employees rather than look to hire new ones. And there is more optimism than last year that autonomous tech will augment, rather than replace, humans. But research from Deloitte's annual Millennial Survey suggests that leaders and employees (particularly younger ones) differ on which skills are most needed and who is responsible for developing them.<sup>2</sup>



# Societal impact: Purpose begins to pay off

**“I don’t agree that there is a trade-off between doing good and profit. In my role, I not only create financial impact, grow the business, and create value—I create human impact. If the entire organization is focused on human impact, I know that we’ll create the financial impact.”**

— Mindy Grossman, president and CEO of WW International

## Executives expressed a genuine commitment to improving the world

For many companies born at the dawn of Industry 4.0, societal impact has been woven throughout the fabric of their organizations from day one. But even more-established organizations are starting to take their impact on wider society more seriously because they believe a sincere commitment to society plays a large role in a company’s success.

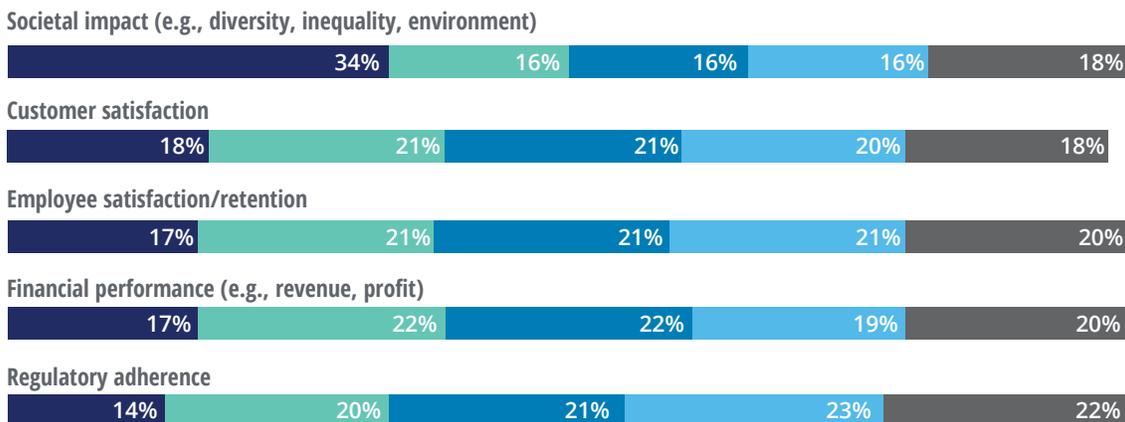
In fact, when asked to rank the most-important factors their organizations use to evaluate their annual performance, more than one-third of executives ranked “societal impact” first, totaling “financial performance” and “employee satisfaction” *combined* (see figure 1).

Why has societal impact blossomed as a business imperative? Part of it surely has to do with company cultures and employee expectations. External pressures also motivate executives—both customer expectations and keeping up with competitors rank highly. But more than anything, leaders seem to believe that doing

FIGURE 1

### Respondents cited societal impact most often as the top factor used to measure success when evaluating annual performance

■ Ranked First ■ Ranked Second ■ Ranked Third ■ Ranked Fourth ■ Ranked Fifth



Numbers may not add up to 100 percent due to rounding

good can be good for business. Almost half of surveyed executives (46 percent) reported that their efforts have been motivated by the quest to create new revenue streams, and a similar percentage said initiatives that have a positive social impact are necessary for sustaining or growing their businesses (see figure 2).

## Purpose in action

Organizations are beginning to put actions behind their words. Seventy-three percent of surveyed CXOs reported having changed or developed products or services in the past year to generate positive societal impact. What’s more, 53 percent said they had successfully generated new revenue streams from these socially conscious offerings.

FedEx is seeking to do just that. As part of its goal to reduce aircraft emissions intensity (on an available

ton mile flown basis) by 30 percent by 2020, FedEx is investing in aircraft modernization and operational improvements, and is driving a culture of innovation around environmental performance through the business. In April 2018, FedEx flew a flagship aircraft 100 percent on biofuel as part of the Boeing Ecodemonstrator project. Additionally, its FuelSense program, which draws on frontline staff ideas for continuous improvement, has saved the business 561 million gallons of jet fuel—88 million in 2017 alone.

Beyond the positive environmental impact, FedEx sees financial justification for these moves. Bert Nappier, president of FedEx Express Europe and CEO of TNT, notes that: “At FedEx, profitability and sustainability go hand in hand. Put simply: When you use less fuel, then you have less fuel costs, which improves our results. Strong financial performance allows us to turn around and reinvest more into our business, technology that benefits the environment, and of course, the communities where we live and work.”

While some leaders have started to see profits from positive societal goods and services, there is disagreement over the question of whether initiatives meant to benefit society also benefit bottom lines. Fifty-two percent see societal initiatives as generally reducing profitability; 48 percent said that such initiatives boost the bottom line. Despite this split, leaders reported a commitment to initiatives that benefit society.

Some companies have made decisions with potentially negative short-term financial impact because of their core values. WW International Inc. (formerly known as Weight Watchers) decided to remove artificial sweeteners, flavors, colors and preservatives from its products. “We made the decision to pull these items off the shelf because, if we are going to be a health and wellness company, we have to meet consumer expectations of what that represents, even if that means having to spend the money to terminate items, reformulate and produce entirely new products,” says WW president and CEO Mindy Grossman.

## Strategically integrated

Beyond products, services, and new revenue streams, leaders are integrating societal impact into their core strategies. Executives said they have been

FIGURE 2

### CXOs’ initiatives are driven by business growth, as well as a desire for positive social-impact outcomes

What, in your view, motivates your organization to undertake initiatives it hopes will have a positive social impact? (Select top three)



particularly effective preparing for the impact that Industry 4.0 solutions will have on society. They're also building external partnerships and joint ventures, and strengthening ecosystem relationships. Nest Labs Inc., for example, has committed to work with other organizations and agencies to install one million energy- and money-saving thermostats in low- and moderate-income homes over the next five years. According to CTO Yoky Matsuoka, Nest "will collaborate with utility programs, government and housing-finance agencies, as well as nonprofit organizations, to bring energy-efficient technology to

the millions of Americans who qualify for income-based assistance programs."

Companies are taking other progressive actions, such as restructuring pricing to better match the needs of consumers in different areas of the world. By adopting a tiered pricing system, the pharmaceutical company Roche can offer drugs to patients in Africa at lower prices than in developed markets. "By substituting volume for price," says vice chairman André Hoffmann, "we can help give access to people who wouldn't normally be able to afford the medicine, thus meeting our needs as a business as well as being socially conscious."

## THE "SOCIAL SUPERS"

Leaders claim that societal impact is an organizational priority, but many still struggle with the tension between positive impact and profits. Has anyone cracked the code? We examined the data to identify leaders who seem to have figured out how to "do well by doing good" by generating new revenue streams through socially or environmentally conscious products or services—and who believe that societal initiatives, more often than not, contribute to profitability.

These Social Supers consider social initiatives fundamental to their business models in the age of Industry 4.0. They see social initiatives as integral to organizational health and translate their optimism about doing good into confidence across a variety of areas:

### ***An appetite for disruption.***

Social Supers appear more likely than others to invest in new technologies to disrupt the market (42 percent versus 29 percent of everyone else) and feel ready to lead their organizations in capitalizing on the opportunities associated with Industry 4.0 (39 percent versus 31 percent).

### ***An able, proactively trained workforce, and an ethical mindset.***

These leaders were also more likely to declare their workforce composition prepared for the Fourth Industrial Revolution (44 percent versus 32 percent) and demonstrate a far greater willingness to train their workers (54 percent versus 37 percent). Further, they reported deeper concern with the ethical use of Industry 4.0 technologies (39 percent versus 26 percent), though they consider ethics less of a challenge as they seek to invest in Industry 4.0 technology, likely because they're already keeping these considerations top of mind.

### ***More holistic and defined decision-making processes.***

Social Supers exhibit greater rigor around decision-making, reporting more clearly defined decision-making processes, a greater propensity to use data-driven insights in decision-making, and a preference for seeking input from diverse and inclusive sets of stakeholders.

While it may be a leap to suggest organizations that prioritize social responsibility are better run, better prepared, or more successful, evidence clearly shows that many well-run companies are guided by leaders who see the connection between good corporate citizenship and business competence as being mutually beneficial.

# Strategy: Roadblocks to effectiveness

**“Deciphering what’s happening in abstract from the hype, understanding what the underlying developments are and how they’re going to affect your business next year and in three years, or in five years—these are probably the hardest things to read. At the same time, we’re always busy changing and adapting and moving along with the trends, and sometimes leading those trends. It doesn’t feel like it’s out of control, but the level of uncertainty and the level of ambiguity you need to deal with is going up.”**

— Harold Goddijn, CEO of TomTom NV

## Executives are struggling to develop effective strategies in today’s rapidly changing markets

To take advantage of the potential growth inherent in Industry 4.0, leaders need to be willing and able to innovate and explore new business prospects. The CXOs we surveyed seemed to embrace this approach. More than two-thirds (69 percent) believe they have permission to fail and learn from their mistakes in the context of innovation.

Although leaders appear to feel empowered to explore the possibilities of Industry 4.0, they remain challenged to translate the possible into tangible business strategies. When asked to state the top challenges their organizations face in adapting their strategies in response to Industry 4.0, a third of leaders cited lack of leadership vision (see figure 3). Leaders also reported having too many technology choices and suggested having difficulty keeping pace with the

rapid rate of change and understanding all the new technology-driven opportunities.

## Challenges to implementing Industry 4.0 strategy

The challenges leaders face in developing effective Industry 4.0 strategies are not limited to vision and technology. Many organizations are simply not implementing effective strategy-development processes. For example, only 29 percent of executives see their organizations as having clearly defined decision-making processes. This may be because only one in five CXOs strongly agreed that strategic decisions are made after input from diverse and inclusive sets of stakeholders. Even fewer leaders fully agreed that their organizations use data-driven insights when making decisions.

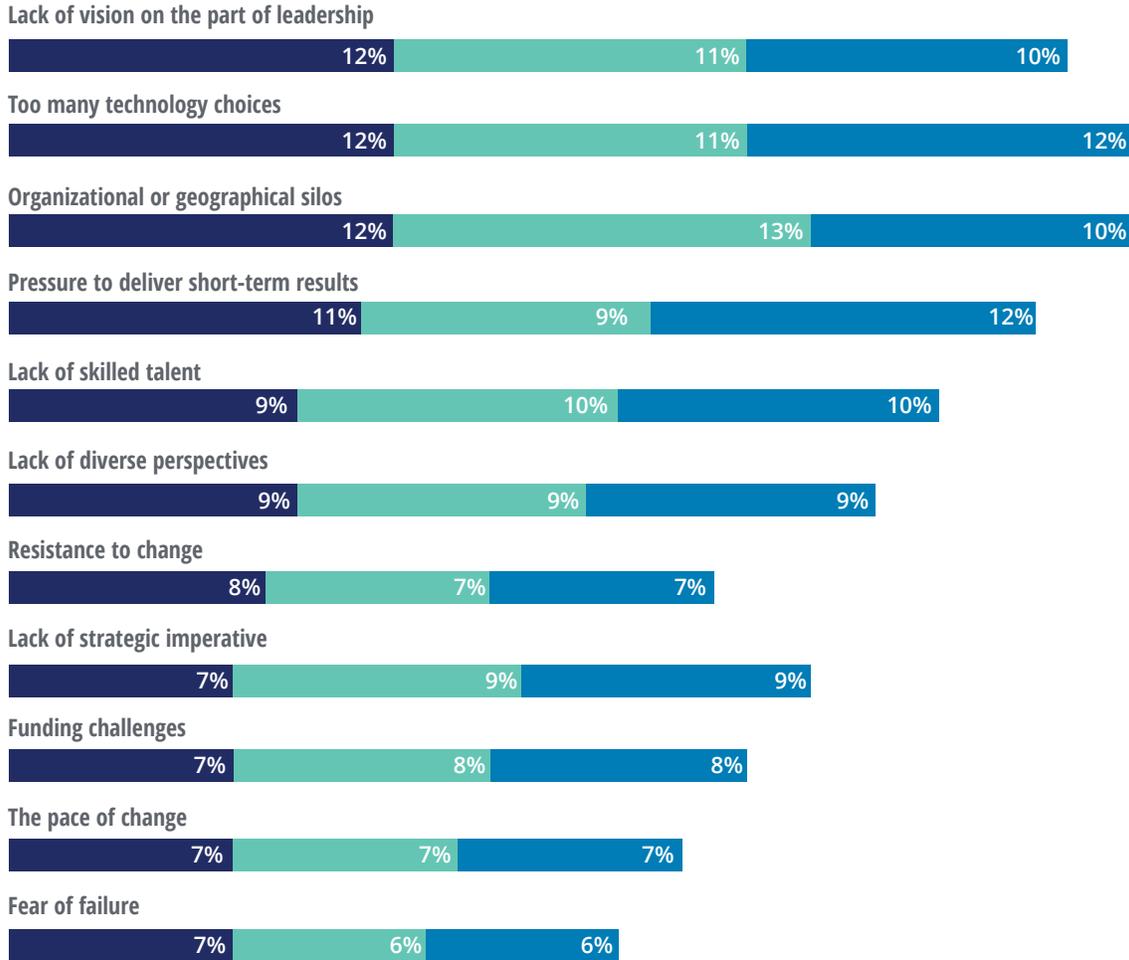
One way that companies are adapting their approaches to developing and implementing effective Industry 4.0 strategies is by eliminating organizational silos. Collaboration or cross-functional teaming, both internally and externally, is necessary for organizations

FIGURE 3

## Leaders reported lack of vision, choice overload, and organizational silos as top challenges to setting an Industry 4.0 strategy

Top challenges in changing strategy for Industry 4.0 (Respondents were asked to rank top three challenges)

■ 1 ■ 2 ■ 3



to generate knowledge and innovate. Organizational silos restrict collaboration, limiting communication, knowledge sharing, and innovation. One-third of leaders in this year’s study ranked organizational or geographical silos among their top three challenges in setting Industry 4.0 strategy. This is a concern: As Carlsberg chairman Flemming Besenbacher notes, “small challenges can be solved by one actor alone, but the challenges that we all face today are too big to handle in isolation. Mutual learning and collaboration is the way forward.”

Leaders from organizations struggling with silos acknowledged the negative impact on their companies’ knowledge bases. Sixty percent reported that their organizations’ Industry 4.0 knowledge was concentrated in a few individuals or groups within the leadership team rather than being widely distributed, creating challenges across multiple fronts, including strategy. Those in siloed organizations were also more likely to say they don’t know what skill sets their workforces will need for the future (41 percent versus 35 percent).

In terms of results, executives whose organizations struggle with silos were less likely to say their technology investments have achieved or exceeded their intended business outcomes. Unfortunately, these companies may not even realize the problem that silos are creating. Leaders from siloed organizations were less likely to identify innovation and creativity as attributes their organizations are currently working hardest to develop (36 percent versus 42 percent).

Overcoming organizational silos can help companies develop clear visions and effective strategies to capitalize

on Industry 4.0. TomTom CEO Harold Goddijn is familiar with the difficulty of keeping his company in a position to execute on all of the opportunities that new technologies offer. To stay on top in rapidly changing markets, TomTom collaborates cross-functionally within the company and externally. “Taken individually, it’s still hard to distinguish and understand where trends will go,” Goddijn says. “But taken collectively, we have a pretty clear picture of where we’re heading and what is possible.”

### **THE “DATA-DRIVEN DECISIVES”**

What about those leaders whose companies follow a disciplined approach in setting their strategies? A methodical approach to strategy development in the Industry 4.0 era, using data to support decisions, gives these leaders—the Data-Driven Decisives—something other leaders don’t have as much of: confidence. Sixty-two percent of these leaders strongly agreed that they are ready to lead their organizations in capitalizing on the opportunities associated with Industry 4.0, almost twice as many as other leaders (32 percent) surveyed.

Data-Driven Decisives also present leadership characteristics that can position their organizations for long-term success. These leaders and their organizations are:

#### ***Bolder.***

Nearly half of Data-Driven Decisives said their organizations invest in technology to disrupt their markets, against only a third of other leaders.

#### ***Committed to their organizations’ workforces.***

Almost half (47 percent) said their organizations possess the correct workforce composition and skill sets needed for the future. Only 35 percent of leaders from other organizations believe this. Further, just over two-thirds strongly agreed that their organizations intend to train their current employees to access the skills required for Industry 4.0; only 41 percent of other leaders said the same.

#### ***Ethically driven.***

Nearly 60 percent of Data-Driven Decisives see their organizations as highly concerned with using Industry 4.0 technologies ethically, nearly twice as many as other leaders (28 percent).

#### ***Strong performance.***

Almost half (46 percent) of organizations led by Data-Driven Decisives in the most recent year generated 5 percent or greater annual revenue growth, in contrast to only 25 percent for other organizations. While just a one-year sample, the relatively stronger performance provides some indication that the Data-Driven Decisives’ approach to Industry 4.0 strategy development can yield success.

# Technology: Cautious approach to disruption

**“Artificial intelligence will be able to drive cars better than existing humans, and in the United States alone, that represents nearly 1.5 million jobs that could disappear if the technology were allowed to dominate. That’s precisely why we need to make sure that we use this new wave of technology as a positive force for good. And that requires us to not just look at the short-term financial interest, but adopt a holistic approach to technology.”**

— André Hoffmann, vice chairman of Roche Holding and chairman of the Hoffmann Global Institute for Business and Society Advisory Board

## Leaders continue to focus more on using advanced technologies to protect their positions rather than make bold investments to drive disruption

Technology is more advanced than ever before, offering opportunities for businesses to create solutions and develop products that were hard to imagine five or 10 years ago. For CLEAR CEO Caryn Seidman-Becker, today’s technology enables “a culture of free thinking, of dreaming the dream” by advancing the development of new technologies that better meet customer needs.

However, some organizations still view technology less in terms of advancement and more in terms of protection. Among a list of 11 topics business leaders said they discuss frequently, “disrupting competitors” ranked ninth, suggesting that upsetting the status quo is a low priority. Further, twice as many leaders said they’re more likely to invest in Industry 4.0 technologies

to protect from disruption than those looking to disrupt (67 percent versus 33 percent). And just 23 percent said their organizations have been most effective at disrupting competitors in the last year.

This apparent lack of aggressiveness can’t be blamed on a lack of money: Just one-quarter cited funding as a primary challenge with respect to investment in Industry 4.0 technologies. So what is holding leaders back from embracing disruptive technologies? Quite a few things, as it turns out.

**Trading the future for today.** As they consider the challenges that stymie their abilities to invest in Industry 4.0 technologies, nearly half of respondents called their organizations overly focused on short-term results. Simply, it can be difficult to justify significant upfront investments or implementation costs for a return on investment that may not appear immediately.

**Investment challenges.** It takes more than technology. Executives also noted a variety of challenges related to Industry 4.0 technology investments: lack of understanding of Industry 4.0 technologies, lack of a business case, and lack of leadership vision. These issues are fundamental not

only to making a convincing argument for investing in technologies but also to ensure that they are implemented and used successfully.

**Too much choice.** When asked about the top challenges they faced with respect to Industry 4.0 strategy, leaders pointed to “too many technology choices” as a top hurdle. Certainly, sifting through the multitude of options can prove humbling, and leaders run the risk of freezing in place.

Despite these challenges, nearly half of those investing in technologies to disrupt the market said those investments met or exceeded their goals. This doesn’t mean that the other half’s disruptive investments are failing: Big bets can take longer to pay off.

## Using technology to enable and grow

Overall, two-thirds of all surveyed executives said their tech investments have met or exceeded expectations. While not necessarily disruptive, new technology is allowing them to address problems that exist for large groups of customers. For example, FedEx applies extensive technology capabilities to help customers ship and optimize their packaging for shipments. Using an innovative packaging laboratory, FedEx is able to use its engineering and design expertise to support customers to develop packaging that is more efficient and better designed for the goods they are shipping. Newly designed packaging allows for less waste, reduces damage, and optimizes shipping costs for customers, while allowing FedEx to make its shipping networks more efficient. This work has both environmental and economic benefits for FedEx and its customers.

Interestingly, businesses stress the need to strike a balance to make sure new technology addresses customers’ needs without being overwhelming. Nest Labs didn’t want its thermostats to “overtake the human” with too many notifications and a complex operating mechanism. According to Matsuoka: “What we said was, all the technology has to be the best-running, has to work with people, put people at the center, put people in control. That’s

the only way we are going to meet our goal of helping people save energy.”

## Ethics and Industry 4.0

The ethical implications of new technologies are serious. Fears about “the machines taking over” may be overblown (or maybe not).<sup>3</sup> Privacy violations, cyber intrusions, and the use of civil technologies for military purposes are prominent policy issues. But in the shorter term, new technologies are forcing leaders to ask whether some things *should* be done just because they can. Thirty-eight percent of executives see ethical considerations as a barrier to investing in technology, so it’s clearly an issue to which many execs are already paying attention.

While leaders are beginning to acknowledge ethical concerns, few companies are actively discussing the subject, let alone acting on it (see figure 4). Fewer than half of leaders said their organizations completely understand the potential

FIGURE 4

### When it comes to the ethical use of technology, the drop-off from understanding to action is steep

(% who “completely agree”)

Our leadership understands the potential ethical ramifications of Industry 4.0 technologies

46%

My organization is highly concerned with ethically using Industry 4.0 technologies

30%

Our leadership has frequent discussions about the ethical use of Industry 4.0 technologies

29%

Our leadership is concerned about our organization being harmed by others’ unethical use of Industry 4.0 technologies

25%

My organization is exploring policies to put in place, or already has policies in place, related to the ethical use of Industry 4.0 technologies

12%

ethical ramifications of Industry 4.0 technologies; just 29 percent reported even discussing ethical concerns. From there, the drop-off continues: Only 12 percent are exploring or already have policies in place related to the ethical use of Industry 4.0 technologies.

At the same time, executives do not appear to welcome government regulation of the ethical use—or any use—of technology; 68 percent of leaders said technology regulation should be guided by market forces, not government, while 69 percent see government’s approach to new technologies as showing a lack of understanding, and the same percentage wish to be

better represented when government makes decisions on technology regulation.

These questions, which are complicated by rapid and significant technological advancements, help explain why business leaders and governments continue to grapple with how to regulate Industry 4.0 technologies. For CLEAR’s Seidman-Becker, balance is key: “With the quickly evolving world we live in, it’s all happening at once. You certainly don’t want regulation to stifle innovation, but you also have to balance it with ensuring the safety and civil liberties of citizens.”

### THE “DISRUPTION DRIVERS”

We examined the data to identify who has made the most progress on the path toward Industry 4.0 disruption and to understand what choices they have made that have set them apart. Executives who reported investing in technologies to upend their markets—and making technology investments that have achieved or exceeded their intended business outcomes—have been designated the Disruption Drivers.

These leaders are more likely to say they feel ready to lead in the Industry 4.0 era (45 percent versus 32 percent) and are more assured that their organizations are prepared to capitalize on the opportunities associated with Industry 4.0. This optimism and confidence lead them to take a more assertive, hands-on approach in a variety of ways:

#### ***Holistic decision-making.***

Beyond their disruptive strategic mindset and strong investment outcomes, these leaders take a more holistic approach to decision-making, which includes clearer processes that are data-driven and get input from diverse sets of stakeholders (see figure 5).

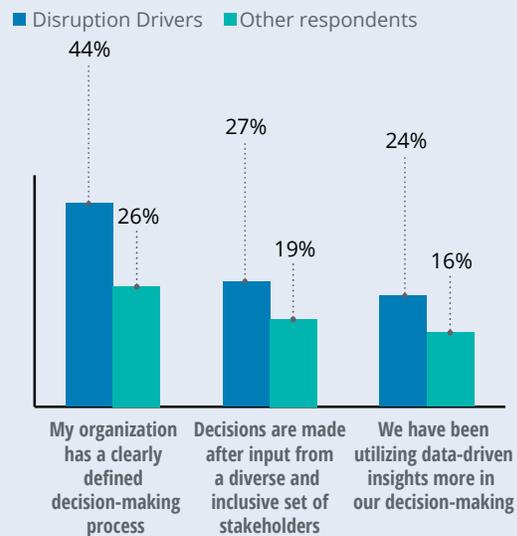
#### ***Rolled-up-sleeves approach to talent—and comfort with the unknown.***

Their proactive decision-making processes are strengthened by a more hands-on approach to improving Industry 4.0 readiness across the organization. Significantly more Disruption Drivers (54 percent versus 33 percent) believe they have workforces with skills for the future—even if they were less likely to say that they know what skills will be needed (56 percent versus 64 percent). Regardless, they plan to jump in to build those skills: 59 percent plan to train their current employees extensively, compared with 40 percent of other leaders.

FIGURE 5

### Disruption Drivers take a more holistic approach to decision-making

(% who "completely agree")



# Talent: Reality sinks in

**“You need a blend of talent. You need those folks who can dream a product, those who can build the product, and the ones who can execute product delivery. Sometimes the best coders are poets. It’s really balanced, and we need a lot of each.”**

— Caryn Seidman-Becker, CEO of CLEAR

## The skills challenge becomes clearer, but so do differences between executives and their workforces

Few business topics receive more media attention than talent and, in particular, the workforce of the future. Leaders who aren’t already experiencing it firsthand have been inundated with information exposing a global skills gap that threatens to grow rapidly as Industry 4.0 matures. Last year, CXOs told us that talent wasn’t among the topics they discuss most frequently—in fact, it was last among 12 choices. This year’s survey suggests that executives are taking the subject far more seriously.

Last year, 86 percent of respondents said their organizations were doing everything they could to create a workforce for Industry 4.0. This year, as more respondents recognized the growing skills gap, only 47 percent saw their organizations as doing everything they could. This implies that executives are more deeply cognizant of the talent challenge ahead and may feel increasingly concerned about their organizations’ readiness.

## Confronting the skills gap with the *right* talent

What’s driving this general unease in talent readiness? According to this year’s study, the

answer lies in a growing talent gap—and in turn, in understanding how to properly address it. Specifically, respondents said their top talent challenge (55 percent) derives from a significant mismatch between current skill sets and those needed in the future (see figure 6 for more detail). The challenges cited in connection with this mismatch illustrate both the difficulty of identifying the right talent and, correspondingly, attracting and retaining these individuals.

Comparing this study and Deloitte Global’s 2018 Millennial Survey,<sup>4</sup> it’s no wonder organizations find it difficult to home in on the right skill sets. For instance, our study of CXOs indicates that, when pressed to choose, two-thirds of executives favored stronger technical capabilities (that is, STEM skills) over soft skills, such as social skills and critical thinking (33 percent)—even as they report currently working in more or less equal measure to develop both areas. Yet in the earlier study, millennials suggested that the top four skills employers need to ensure long-term success were interpersonal skills, confidence/motivation, ethics/integrity, and critical thinking.

Perhaps these mismatched perspectives signal a need for greater balance. At WW International, CEO Grossman seeks employees with both IQ and emotional intelligence. “Of course, you’re going to need science and technology skills,” she says, “but you can’t hire that as a replacement for EQ.”

FIGURE 6

## Executives report a mismatch between the skills their workers have now and the ones they'll need in the future

Top challenges in preparing the workforce  
(Respondents were asked to rank top three challenges)



Another explanation might be that the skills needed in the near term and further down the line will change. Although executives likely have a sense of what skills will be most valuable a year or two into the future, our survey found that 46 percent of executives cited a lack of knowledge of what skills will be needed as one of their top challenges in preparing their workforces for Industry 4.0.

The skills needed for the future will likely depend on who is doing the work. CXOs were more confident this year than last (63 percent versus 53 percent) that technology will augment rather than replace humans. “Every generation has experienced automation in some form, and it has always changed the way we work,” says Bert Nappier from FedEx Express Europe and TNT. “I believe that the automation we face in the future will lead to the creation of new jobs, as history has demonstrated, but the nature of many of those jobs will be different. Robotics and automation will create even more

demand for service-oriented employment, meaning that softer skills, such as adaptability, communication, agility, intelligence, and judgment will be important for future generations.”

## Education systems

The executives we surveyed did not see public education systems evolving with the pace of technology. When asked whether these systems need a redesign to prepare graduates for Industry 4.0, those agreeing increased from 35 percent last year to 57 percent.

“Education systems in different countries do an excellent job in preparing kids and giving them a good level of understanding and problem-solving,” says TomTom’s Goddijn. “But where the rubber is hitting the road, they’re not very well prepared. In fairness, it’s hard for business to ask the government to prepare students, because things are changing very rapidly. And the speed by which the education system is changing is a completely different track. I don’t think it would be wise for business to wait for that moment to happen—it could take a very, very long time.”

Nest Labs’ Matsuoka agrees. From a recruitment standpoint, she says, “There aren’t too many people whom we can take straight out of university who have everything we need.” She would like to see educational institutions introduce more group-based and project-based activities and give early exposure to Industry 4.0 technologies in high school and college.

## Talent development and accountability

If our educational systems are not to be fully relied upon, then how do we prepare the workforce of the future? Surveyed leaders were more likely to say it falls more on the individual (rather than the business)—through self-education, continuing education, and ongoing professional development—to prepare for Industry 4.0 changes.

That shouldn’t imply that leaders intend to abdicate training efforts entirely: 43 percent of

respondents recognized the importance of training existing employees (versus 25 percent primarily looking to hire new employees). Further, 41 percent are developing external training programs, such as apprenticeships, to help facilitate this skills development.

Leaders are generally committed to developing workforce capabilities and will continue to offer training opportunities, but they also expect their employees to drive their developmental journeys. Finding this balance is key, according to Shanghai Auto Gear Works CEO Qian Xiangyang. “Making employees become the most important assets and core competencies of enterprises . . . is not a one-step process,” he says. “It requires us to accelerate the formation of a holistic talent development strategy and system.”

However, this may go against the grain of what younger workers expect, as eight out of 10 respondents in the 2018 Millennial Survey suggested that employer-led programs will help them perform

at their best.<sup>5</sup> Tellingly, 46 percent who feel properly prepared by their organizations are likely to stay for five or more years, while those who feel unsupported (28 percent) are likely to leave their organizations in two years or less.

Regardless of where workers will receive their training, leaders agree that it is essential to connect this to the future needs of businesses. That approach is echoed in a research study co-authored by Deloitte Global and the Global Business Coalition for Education, “Preparing tomorrow’s workforce for the Fourth Industrial Revolution,”<sup>6</sup> which offers a framework for action and calls on the business community to take a more proactive role in preparing today’s youth. As Carlsberg’s Besenbecher points out, “Business needs to be vocal about what skills it will need and must collaborate with governments, individuals, and educators to ensure that today’s youth are being prepared for the jobs of the future.”

### **THE “TALENT CHAMPIONS”**

Encouragingly, our analysis found a subset of Talent Champions—executives who are further along than their peers in preparing their workforces for the future. They believe they know what skill sets their companies need—and that they currently have the correct workforce composition.

#### ***Proactive approach.***

These executives are not complacent—they’re aggressively preparing their workforces for the future. They embrace their responsibilities to train their employees for the future of work (51 percent versus 41 percent for all other respondents). Talent Champions also are more likely to invest in technologies to disrupt competitors (42 percent versus 32 percent).

#### ***Societal and ethical emphasis.***

Talent Champions place greater emphasis on ethical technology usage (44 percent versus 28 percent) and, perhaps related, 64 percent have been able to generate new revenue streams through socially driven initiatives (versus 51 percent). This may reflect a positive outcome of “doing well by doing good.” That is, by putting workforce development at the forefront, employees may be more aligned and motivated to extend the influence of their newly developed skill sets.

# Summary: Faces of progress

The preceding sections highlight four personas of leaders who are finding ways to turn societal initiatives into profitable ventures, act decisively in an increasingly complex environment, deploy new technologies in a disruptive manner, and equip their workforces with the right skill sets to navigate the Fourth Industrial Revolution. Encouragingly, this research also shows that these personas share a number of characteristics that might offer lessons for those still trying to define their approaches. Some common threads we see across all leader types include:

- **A commitment to doing good.** All are highly attuned to using Industry 4.0 technologies in an ethical manner. For many, this has resulted in societally driven products that have created new revenue streams.
- **Clearer vision of the path forward.** They are purposeful and methodical in setting Industry 4.0 strategies. Their companies follow clearly defined processes and use data to make decisions, more so than other companies.
- **Longer-term lens on technology investments.** In addition to achieving incremental gains for short-term initiatives, these leaders are more likely than others to invest in Industry 4.0 technologies to disrupt their markets.

- **Taking the lead on workforce development.** They embrace the opportunity to extensively train their existing employees. Further, they are more confident that their organizations already possess the correct workforce composition for the future.

Two more things they have in common: They are growing faster (that is, more than 5 percent annually) than their counterparts (32 percent versus 20 percent). And they're more confident in their own abilities to lead their companies in the Industry 4.0 world—which is telling, given the uncertainties that many surveyed CXOs indicated.

While leaders with these characteristics stand apart, over the past year, leaders' general ambiguity seems to have subsided into clearer, more tempered perspectives. They better recognize the many dimensions—and ensuing challenges—associated with the Fourth Industrial Revolution. These include societal and ethical implications, the importance of clear vision and collaborative organizations, the trade-offs of investing in technology for the short versus long term, and addressing the talent gap. Executives' mindsets have evolved from a “tension between hope and ambiguity” to “clarity gives rise to progress.” That, in itself, represents progress.



## Endnotes

1. Punit Renjen, "Industry 4.0: Are you ready?", *Deloitte Review* 22, January 22, 2018.
2. Michele Parmelee, "Insights from the 2018 Deloitte Millennial Survey," Deloitte Insights, May 15, 2018.
3. Joe McKendrick, "Artificial intelligence will replace tasks, not jobs," *Forbes*, August 14, 2018.
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5. Ibid.
6. Deloitte and Global Business Coalition for Education, "Preparing tomorrow's workforce for the Fourth Industrial Revolution," 2018.

## Methodology

This research is based on a survey of 2,042 global executives and public sector leaders conducted by Forbes Insights in June-August 2018. Survey respondents represented 19 countries from the Americas, Asia, and Europe and came from all major industry sectors. All survey respondents were C-level executives and senior public sector leaders, including CEOs/presidents, COOs, CFOs, CMOs, CIOs, and CTOs. All executives represented organizations with revenue of \$1 billion or more, with half (50.1 percent) coming from organizations with more than \$5 billion in revenue. Sixty-five percent of public sector leaders represented organizations and agencies with budgets of \$500 million or more. Additionally, Forbes Insights and Deloitte conducted one-on-one interviews with global industry leaders and academics.

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